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IMPLIED WARRANTY IN THE SALE OF FOODSTUFFS.

An interesting decision of the Supreme Judicial Court of Massachusetts is published in this issue of the Public Health Reports, page 3477. A Massachusetts man and his wife were made ill by eating pork, and they brought suit for damages against the dealer who sold the meat. The court stated the facts as follows: "His wife [the wife of the purchaser], acting as his agent, left to the defendant the selection of the meat, and paid for it at the current price for sound, wholesome pork chops. * * * The defendant Freshman undertook to make the selection so left to him. The meat was cooked, and was eaten by the plaintiff and his wife, and both were made sick."

The law of Massachusetts applicable to the case was stated in the opinion as follows: "Where the buyer at a shop relies on the skill and judgment of the dealer in selecting food, and it is made known to the dealer that his knowledge and skill are relied on to supply wholesome food, he is liable if it is not fit to be eaten; while, in case the buyer himself selects provisions, the dealer's implied warranty does not go beyond the implied assertion that he believes the food to be sound."

The court decided that the husband was entitled to damages, but the wife could not recover because "the only sale was that made to her husband through her as his agent," and "there was no contractual relation, and hence no warranty," between her and the defendant.

MALARIA.

A PUBLIC HEALTH AND ECONOMIC PROBLEM IN THE UNITED STATES.[1]

By JOHN W. TRASK, Assistant Surgeon General, United States Public Health Service.

It is human nature to fear the unusual and the unknown. Few give due attention to the commonplace affairs with which they have become familiar. An exotic disease which threatens invasion or an occasional malady of which little is known will arouse a general

[1] Read before the General Session, American Public Health Association, Cincinnati, Ohio, Oct. 27, 1916.

interest, while ailments which are widely prevalent and are thoroughly understood receive the most meager attention. Plague, leprosy, or typhus fever arouses to instant activity the press, the people, and the health authorities, while commoner diseases, though more destructive, receive far less consideration.

The purpose of health departments is to promote the welfare of the people by securing them against unnecessary exposure to disease. Their duty is to prevent the preventable conditions which produce disease. It would seem logical, then, to devote first attention to the conditions which our present knowledge shows to be surely preventable and, of these, primarily to the ones which offer the fewest obstacles to control. If of such disease-producing factors we have any which at the same time are affecting large numbers of people, they would seem to demand our first efforts. Malaria is a disease produced by such conditions.

To fear death and the diseases associated with death and to give less consideration to the ailments which are not directly mortal are common characteristics. Malaria is not commonly a direct cause of death and has aroused little of the interest usually associated with more obviously fatal morbid processes.

It is not commonly realized that each attack of disease does some injury to the human machine, leaves some organ weaker than it was before, and lessens the time during which the body can continue to resist the destructive agencies in its environment. The terminal illness is not usually the one which has been the deciding factor in determining the individual's length of life. It is frequently but the last inimical process to attack a weakened human organism, an organism exhausted and with diminished resistance as a result of previous diseases and morbid processes. Malaria is a potent factor in determining the average duration of life in areas where it is endemic. This influence is not only one directly affecting the individual, but it also has its effect on the offspring. A mother suffering from chronic malaria can not satisfactorily nurse her child. Nor will the child have had the same prenatal advantages as the offspring of a healthy parent. Then, too, a malarious father will not be so likely to furnish a suitable economic status for the family. Malaria is not alone a health problem. It is equally an economic problem which merits consideration aside from its relation to health.

Former Prevalence.

At one time malaria was endemic over a much greater area of the United States than it is to-day, and in many sections where it is still endemic its prevalence has greatly diminished. Fifty years ago the disease prevailed farther north than it does now. The endemic area

extended to the Great Lakes and into Canada. Ague was in this section the most common of ailments and quinine the most universal of household remedies. The early literature indicates that the disease was formerly more or less prevalent also in Iowa, Minnesota, the Dakotas, Utah, Colorado, Montana, and Wyoming.

The northern boundary of prevalence has gradually receded, leaving here and there more or less localized endemic foci. Why it has disappeared from large areas and clung to certain localities is largely a matter of conjecture, although a careful study of conditions would probably explain the apparently perplexing phenomenon. It would be of interest to explain satisfactorily why it has all but disappeared from Wisconsin and Michigan, two States at one time badly infected, and still persists in certain sections of New England. The underlying reasons for the recession of the northern boundary of endemicity are probably that, other things being equal, the conditions necessary to the perpetuation of the disease are found increasingly favorable as one approaches the equator and that the disease is disappearing first from the localities where the climatic conditions are the least favorable to it.

Malaria is also diminishing in many localities of the South. The reasons for this, given by Dr. Carter, for one locality and based upon personal observation, were: (1) The improved economic status of the farmer, which made possible better housing and a better environment generally. (2) The more extensive cultivation of the land, with the consequent better drainage and fewer collections of standing water in which the mosquitoes can breed, and the cleaning up of brush and other wild growth in which the mosquitoes find shelter. (3) The more general use of quinine, which has become a household remedy and is taken freely in all cases with chills or fever as well as for other symptoms of illness.

Present Prevalence and Geographic Distribution.

The impossibility of knowing the prevalence or virulence of a disease in the absence of the systematic reporting of cases or the making of intensive sickness surveys of the population is especially well illustrated in malaria. There are few diseases to which health departments have given so little attention. Seven years ago letters were sent by the United States Public Health Service to the health departments of the States in which malaria was supposed to be most prevalent, asking for information as to the distribution of the disease in the several States, but the information was not available. The same lack of information has been in large measure true of cities. Health departments as a rule do not come in contact with malaria, and to them the disease seldom projects itself as a problem. In a

population heavily infected with malaria a few cases of smallpox cause the taking of immediate measures for control, while malaria is entirely ignored, although usually of far greater import.

Nor is the opinion of the practicing physician as to the prevalence of the disease in a locality much more accurate than that of the health department, although he comes into direct contact with cases and might be expected to know existing conditions. Asst. Surg. Gen. H. R. Carter, in reporting on an investigation of a particularly malarious locality in the South, stated:

* * * At no place was I able to obtain any definite statistics as to the prevalence of malarial fever there, not even as to its comparative prevalence or its virulence. Each physician had an impression that it was "much" or "little," "less than" or "more than," or "about the same as" the last 5 or 10 years. It was "not very malignant" or "showed many bad cases" in the opinion of different men. I could not determine the number of cases, even approximately, in any community. * * *

Also in speaking of his observations of the prevalence of the disease in a section of North Carolina, a locality probably typical of the areas where the disease is most prevalent, Carter thus described the conditions:

In the absence of statistics, I can only say that there is much malaria in eastern North Carolina, mainly of a rather mild type, tertian, but there is some estivo-autumnal. There is some in every town I visited, generally in proportion inversely to its size, but varying, of course, with its environment. There is much more in the country and of severer type than in the towns. In days not long gone by there was a large amount of extremely severe malaria in this section, not less than there was in the Canal Zone, and there is from report not a little now, especially blackwater fever and malaria of the cerebral type, in some rural districts and villages. * * *

In most districts in the tidewater region but few people living in the country can attain the age of, say, 30 years without malarial attacks enough to acquire a high degree of immunity, like the natives on the Isthmus and other malarial localities. Those who did not attain a fair degree of immunity would probably not attain adult age. The prevalence of malaria, then, is most injurious to children, who are, of course, newcomers, during the time they should be getting their growth and education, and it gives them a permanent handicap in life.

The Public Health Service has for the last four years circularized the physicians of most of the Southern States to ascertain as definitely as this means would allow the prevalence of the disease. To determine its geographic distribution elsewhere circular letters of inquiry were sent recently to the health departments of all the other States and of cities of over 10,000 population. The records of the occurrence of malaria at Army posts were also consulted. The mortality records of the registration area for deaths were examined, but, of course, gave little information of value, for the reason that malaria may be prevalent without appearing in the records of deaths. This is illustrated by the fact that between 1904 and 1914 there were in the Army

in the continental United States, exclusive of Alaska, over 13,000 cases of malaria, while during this time there were only 2 deaths due to the disease. Between 1907 and 1914 there were over 7,000 cases without a death. Then, too, in civil life malaria frequently is given as a cause of death when the deceased was affected with some other condition and not malaria. This is true both in malarious localities and in localities where the disease does not exist. And as malaria appears comparatively infrequently in mortality records at most, it is impossible by this means to separate malarious from nonmalarious localities.

As to the geographic distribution of malaria in the United States at the present time, there are three principal well-recognized endemic areas, one large area and two smaller ones. The large endemic area covers the whole southeastern portion of the United States, having for its southern boundary the Gulf of Mexico; for its western boundary, a line drawn from Eagle Pass, on the Rio Grande, to Leavenworth, Kans.; for its eastern boundary the Atlantic seaboard; its northern boundary, a line drawn from Leavenworth, Kans., eastward some distance north of the Ohio River and extending to the Atlantic on a line with the northern boundary of Maryland. Of the two smaller endemic areas, one includes a section of the northern part of New Jersey, southeastern New York, Connecticut, Rhode Island, and part of the State of Massachusetts. The third recognized endemic area is in California, and includes the Sacramento and San Joaquin Valleys, which occupy a large portion of the central part of the State. It is probable that the New England endemic area actually extends southward to the large southern area of which it is in reality a part.

As indicated by reports received from State and city health departments and the records of Army posts, there are lesser endemic areas scattered here and there in many other States. (See map.)

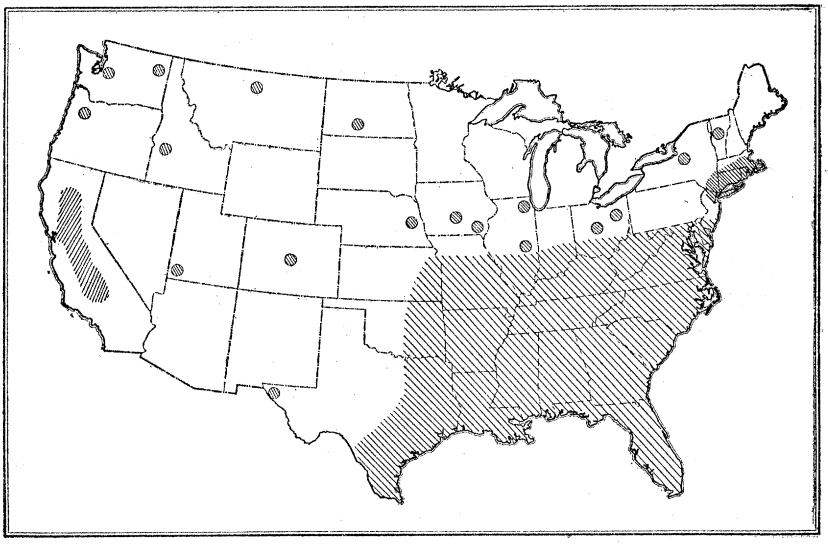
The records of the Army posts are not without interest. Fort Washington, Md., had for several years up to 1913 the highest malaria sick rate of any post in the United States. The admission rate varied from 736 per 1,000 mean strength in 1906 to 172 per 1,000 in 1912. In the annual report of the Surgeon General of the Army for the year 1911, in referring to the conditions at Fort Washington, it was stated that the malaria rate at this post was higher than that of any post in the Philippines garrisoned by white troops, except Camp Stotsenburg.

While the malaria rate in the Army has steadily declined during recent years, it is suggested that the causes are the improved conditions at the posts, better barracks, and greater attention to screening and drainage, also that the troops still suffer from the infection present in localities surrounding many of the posts.

In 1914 the highest malaria rate at any Army post in the United States was 73 per 1,000 mean strength at Washington Barracks in the District of Columbia. The second highest was at Fort Myer, Va., just outside of Washington, and the third highest at Leavenworth, Kans.

Economic Importance.

In localities where malaria is endemic large numbers of people are likely to become infected sooner or later. Many become infected year after year, and in some the disease becomes chronic. Infected individuals have their efficiency impaired as parents, as workmen, and as citizens. Infected workers lose more or less time because of the disease and are less satisfactory workmen. While it is true that



Endemic areas of malaria.—Shaded portions of map show endemic areas. Shaded circles represent localities in which cases of malaria occur and in which the disease is probably endemic.

in endemic localities adults frequently develop an immunity, this is done at the cost of infections endured during childhood and youth, when the effects are a serious handicap to proper physical development and education. A malarious population may therefore be expected to be physically and educationally subnormal according to the degree of prevalence of the disease.

The economic importance of the disease is well brought out by a report of von Ezdorf[1] on conditions at a mill town in an endemic area. According to the health officer of the town, who had been employed by the mills to render medical services to the employees and

[1] von Ezdorf, R. H., Demonstrations of Malaria Control, Public Health Reports, Mar. 10, 1916, pp. 614–629.

their families, 75 per cent of the people in the town had malaria during the summer of 1910, and its prevalence during 1911, 1912, and 1913 was as great. The population was constantly shifting, many families leaving on account of the prevalence of malaria, others coming in search of work. It was estimated that 50 per cent of the population were in a sense transients. Mills were operating short handed much of the time during these years. The medical services in attending the sick suffering from malarial fevers became arduous, so that during the four months of June, July, August, and September, 1913, visits on account of malaria alone averaged 50 per day. At times there were three, four, and even as many as seven members of a family suffering with malaria at the same time.

In October, 1913, a house-to-house canvass of four blocks was made, and of 500 persons, 233 reported having had chills and fever during the preceding five months. The blood of 400 persons was examined and the plasmodium found in 55, or over 13 per cent, approximately 1 in every 7 examined.

Measures were inaugurated to get rid of mosquito-breeding places and the use of quinine was encouraged. A year later the town was again visited and the blood of 780 persons examined. Of these only 35, or 4.5 per cent, showed infection. The health officer reported at this time that his visits among the mill employees for several months had averaged not over one a day, and that many of these were undoubtedly for old infections lasting over from previous years. The malaria rate had continuously decreased during the months when it was usually at its worst. The health officer of the town in his report for 1914 stated that while during the summer of 1913, prior to antimalarial work, the mills were constantly short of help on account of the large number of employees sick with malaria, during the summer of 1914 there had not been a day when the mills did not have sufficient help. The manager of one mill also stated that the improvement in the regularity and efficiency of the employees had been such that the amount ($1,000) which the mill had contributed to the fund for antimosquito work was more than regained in one month's operation.

During the succeding year very few cases of new infection were found, although a number of chronic infections persisted. In October, 1915, the examination of the blood of 968 persons showed only 3.5 per cent infected, while the blood of 30 persons living in surrounding uncontrolled territory showed 6 infections. At this time the manager of one of the mills previously mentioned wrote:

I will frankly admit that I could not realize what a great change could be brought about by systematic work and with comparatively little expense. The money spent in antimalarial work here has paid the quickest and most enormous dividends I have ever seen from any investment, and after having had our ex-

perience I would, if necessary, do the work over again if I knew it would cost ten times the amount. * * * Our experience has taught us that the eradication of mosquitoes is not only the proper thing to do from a strictly health standpoint but it is an exceedingly profitable thing to do.

Conclusion.

In conclusion, the malaria situation in the United States may be summed up as follows:

(1) In the territory extending from the Gulf of Mexico to a line north of the Ohio River and from the Atlantic seaboard to and into the eastern part of Kansas, Oklahoma, and Texas, few, if any, localities are entirely free from malaria. In most of the lowlands it is very prevalent; in the mountains and better drained areas less prevalent.

(2) The disease is also endemic in southeastern New York and parts of Connecticut, Rhode Island, and Massachusetts, and in California in the Sacramento and San Joaquin Valleys.

(3) There is probably no State in the Union in which the disease is not present and in which it is not spread by mosquitoes grown locally.

(4) The disease constitutes one of the big national health problems. It is also an economic problem of importance.

(5) The actual geographic distribution of the disease and its relative prevalence can be definitely determined only by making painstaking malarial surveys or by requiring cases to be reported to the health authorities and the authenticity of the reports verified by blood examinations.